

41

AMENDED CLAIMS

[received by the International Bureau on 12 September 2005 (12.09.05);
original claims 1-27 replaced by new claims 1-17
(2 pages)]

+ STATEMENT

1. Bisphosphonylated-epsilon-polylysine peptides that are capable to complex with calcium ions and to protect teeth against acid attack.
2. Peptides according to claim 1. wherein said bisphosphonylated-epsilon-polylysine peptide is
2-epsilon-polylysine-1-hydroxyethane-1,1-diphosphate.
3. The use of proteins that contain at least 40% lysine amino acids and that are conjugated with one or more calcium complexating components selected from the group consisting of bisphosphonyl-, biscalboxyl- and casein phosphopeptide components, for the protection of teeth and/or to control the bacterial flora in the oral cavity.
4. The use according to claim 3 wherein said protein is epsilon-polylysine conjugated with one or more bisphosphonyl components.
5. The use according to claim 3 wherein said protein is epsilon-polylysine conjugated with one or more biscalboxyl components.
6. The use according to claim 3 wherein said protein is epsilon-polylysine conjugated with one or more casein phosphopeptide components
7. The use according to claim 3, 4, 5 and 6 wherein said protein is a peptide.
8. The use according to claim 3. and 4. wherein said bisphosphonyl component is 1-hydroxyethane-1,1-diphosphate.
9. The use of epsilon-polylysine or polylysine against halitosis
10. The method to produce bisphosphonylated epsilon-polylysine from a mixture of hydrogen peroxide, epsilon polylysine and vinylidene diphosphate (in salt or acid form).
11. The method to produce bisphosphonylated epsilon-polylysine characterized in that: epsilon polylysine is allowed to react with a bisphosphonylated epoxide at pH from 3 to 9
12. The method according to claim 11 wherein some of the substituents on the epoxide consists of hydrogen or alkyl groups and wherein the phosphonyl

groups are esterified or exist in the acid (H^+) or salt (Na^+ , K^+ , other) form or a mixture.

13. The method according to claim 11, wherein the bisphosphonylated epoxide is epoxyethane-1,1-diphosphate.

14. The method according to claim 11 wherein the reaction is carried out at a pH of between 3 to 6 and with a BF_3 catalyst in water or in alcohol, such as methanol, ethanol, propanol or butanol, or in a mixture of water and alcohol.

15. The method to produce bisphosphonylated epsilon-polylysine characterized in that: epsilon polylysine, that has been denaturated with a denaturing agent such as urea, is allowed to react with a bisphosphonylated epoxide at a pH of between 3 to 9.

16. The use of the compounds indicated in claims 1 to 9 as ingredient or combination of ingredients, in products for oral care such as toothpaste, mouth-refreshing solution, mouth sprays and gels, chewing gum, candies and other food systems, artificial saliva's, medical oral care products for the treatment of teeth from patients with xerostomia, oral cancer, Hodgkin's disease, Sjögren syndrome, HIV, diabetes.

17. The use of the compounds indicated in claims 1 to 9, according to claim 16, in combination with additional ingredients such as fluoride, anticariogenic sugars, peptides for remineralisation, antibacterial products, vaccines, anti-bodies, acid absorbing ingredients, encapsulated ingredients, thickeners, anionic, nonionic, cationic or amphoteric detergents, humidifiers, abrasive ingredients, anti-tooth stone, aroma's, preservatives, cooling agents, anti-sensitive ingredients and/or sweeteners.